A huge particle accelerator will be constructed in Daedeok In-
nopolis. The accelerator may be considered as a huge electric
circuit, containing a lot of bridges. The bridges must be con-
nected by wires. Particularly, there are red and blue bridges,
and each red bridge must be connected by a wire to one of
the blue bridges. The goal is to minimize the total length of
wires connecting red bridges with blue ones.

   More precisely, we have a circle representing the accelera-
tor, and there are red and blue points on the circle represent-
ing the red bridges and the blue bridges. The number of red
points is less than or equal to the number of blue points and all red and blue points are distinct. Each
red point must be connected to a blue point with a wire. Two or more red points cannot be connected
to the same blue point. The length of wire is the arc length between the connected points. So the goal
is to minimize the sum of the arc lengths between matched points.

   For convenience, we use a circle of perime-
ter n, and consider only locations on the circle
such that the arc length between two adjacent
locations is 1. The locations are numbered by
$0, 1, \ldots, n-1$ clockwise. Each red or blue point
is at one of these locations, that is, the location
of a red or blue point is represented as one of
the integer numbers $0, 1, \ldots, n-1$. The length
between arbitrary pair of red and blue points is
always an integer. For example, Figure 1 shows
3 red points and 3 blue points lying on a circle
with 12 locations. In an optimal matching of this
example, the red points at location 1, 3, and 9
are matched with the blue points at location 5,
4, and 10, respectively. So the minimum sum of
arc lengths between the matched points is 6.

Figure 1.

   Given red and blue points on a circle sorted
clockwise, write a program to match the red
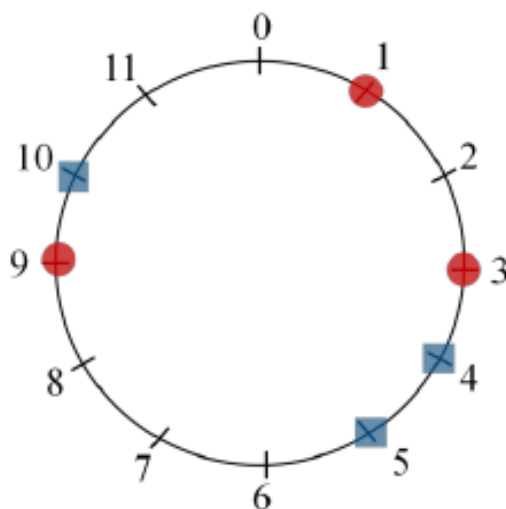points and the blue ones minimizing the sum of the arc lengths between matched points.

Input

Your program is to read from standard input. The input consists of T test cases. The number of test
cases T is given in the first line of the input. Each test case starts with a line containing three integers,
n, a and b ($1 \le n \le 1,000,000$, $1 \le a \le b \le 1,000,000$, $2 \le a+b \le n$), where n is the number of
locations considered on the circle, a is the number of red points and b is the number of blue points. In
the second line of each test case, a sorted integers $x_1, x_2, \ldots, x_a$ are given, representing the locations
of red points. In the third line of each test case, b sorted integers $y_1, y_2, \ldots, y_b$ are given, representing
the locations of blue points. Then $0 \le x_i, y_i \le n-1$, $i = 1, \ldots, a$ and $j = 1, \ldots, b$, and all x_i's and y_i's
are distinct. There is a single space between two integers in same line.

Output

Your program is to write to standard output. Print exactly one line for each test case. The line should
contain the minimum of the sum of arc lengths between the matched red and blue points.

Sample Input

```
2
12 3 3
1 3 9
4 5 10
12 3 4
1 4 7
3 6 8 11
```

Sample Output

```
6
4
```